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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/437,882	11/10/99	KOSOWSKY	L 23587-702

021971
WILSON SONSINI GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO CA 94304-1050

EXAMINER	
PATEL T	
ART UNIT	**PAPER NUMBER**
2841	9
DATE MAILED:	10/19/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95)
*U.S. GPO: 2000-473-000/44602

1- File Copy

Office Action Summary	Application No.	Applicant(s)	
	09/437,882	KOSOWSKY, LEX	
	Examiner	Art Unit	
	Ishwar B Patel	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2001, paper #8* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,18-36 and 49-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,18-36 and 49-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 November 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6 . (4 pg)
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 1-14,18-36 and 49-61 in Paper No. 8 is acknowledged. Because claims 15-17 and 37-48 are different embodiment of the invention, the restriction is made final.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the non-conductive layer on the first surface of the substrate as claimed in claims 8 and 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Reference numerals used to describe figure 7, such as 730, 830, 930, 735, 835, 935, etc. are not shown in the figure.

Correction is required.

Specification

4. The disclosure is objected to because of the following informalities:

"The non-conductive layer 30" should be - - non-conductive layer 20 - - .

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 7-9,19-21, 32-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7-9 point out to a non-conductive layer /mask used in a process steps prior to completion of the product and is not a part of the final structure.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Shrier, US patent No. 4,977,357, disclosed by the applicant.

Regarding claim 1, Shrier discloes a device comprising:

a substrate comprising voltage switchable dielectric material which renders the substrate conductive when a voltage is applied to the substrate above a threshold

voltage value and renders the substrate resistive when voltage is applied to the substrate below the threshold voltage value; and a current carrying formation formed on a first surface of the substrate (see figure 2, column 2, line 10 to column 3, line10),

the current carrying formation being in electrical communication with the substrate when a voltage is applied to the substrate above the threshold voltage value (electrode 24, see figure 2, column 2, line 52-65).

Regarding claim 2, Shrier further discloses the voltage switchable material comprises a mixture of a binder material, conductive material and cross-linking agent (column 3, line 30-35).

Regarding claim 3, Shrier further discloses the conductive material is dispersed as a powder in the mixture (column 3, line 30-60).

Regarding claim 4, Shrier further discloses the binder material includes a polymer binder, the conductive material includes a metal powder, and the cross-linking agent includes Varox peroxide (column 3, line 30-60).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 5-7 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shrier, US Patent No 4,977,357, as applied to claims 1-4 above, and further in view of Shrier US Patent No. 5, 248,517, hereafter referred to as '517, disclosed by the applicant.

Regarding claim 5, Shrier does not explicitly disclose the current carrying formation is electrochemically bonded to the surface of the substrate. However the determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 6, though Shrier discloses current carrying component on both the side of the substrate, fail to disclose the via structure connecting them. However via structure is known in the art for electrical connection of the conductive traces / layers in double sided circuit board or in multiplayer circuit board. Further '517 discloses the use of voltage switchable material in the manufacture of any type of printed circuit board (see '517, column 3, line 34-48). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of

Shrier with via structure depending upon the use or for that matter the coated voltage switchable material of '517 can be used for a device having via structure in order to get the connection electrical connection between the two layers.

Regarding claim 7, the applicant is claiming a plurality of current carrying elements separated from each other by a plurality of gaps. However the it a known in the art and is the way the various elements are produced on the circuit surface for different uses, such as traces for power or ground or signal or pads for component.

Regarding claim 51 and 52, the applicant is claiming various threshold voltages for the substrate. However the threshold voltage of the substrate will depend upon the spacing between the conductive particles, the particle size and shape and the electrical properties of the insulating binder material. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of Shrier with threshold voltage value for the substrate between 10 volts and 300 volts as claimed in claim 51 or 30 and 300 volts as claimed in claim 52, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art, In re Boesh, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

11. Claims 10-14 and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shrier, US Patent No 4,977,357, as applied to claims 1-4 above, and

further in view of Shrier US Patent No. 5, 248,517, hereafter referred to as '517, disclosed by the applicant.

Regarding claim 10, it is obvious as explained in the claim 6 above.

Regarding Claim 11, it is obvious as explained in the claim 5 above.

Regarding Claim 12, it is obvious as explained in the claim 7 above.

Regarding 13 and 14, Shrier further discloses the voltage switchable material comprises a mixture of a binder material, conductive material and cross linking agent (column 3, line 30-35) as claimed in claim 13 and the conductive material is dispersed as a powder in the mixture (column 3, line 30-60) as claimed in claim 14.

Regarding claim 53 and 54, they are obvious as explained in claims 51-52.

12. Claims 18-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shrier, US Patent No 4,977,357, as applied to claims 1-4 above as applied to claims 1-4 above, and further in view of Shrier US Patent No. 5, 248,517, hereafter referred to as '517, disclosed by the applicant.

Regarding claims 18 and 19, they are obvious as explained in claim 7 above and further the determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claims 22-25, 28-30, the applicant is claiming various steps / processes for the formation of current carrying pattern / vias on the substrate. However, the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claims 26 and 27, they are obvious as explained in claims 51-52.

13. Claims 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shrier, US Patent No 4,977,357,as applied to claims 1-4 above, and further in view of Shrier US Patent No. 5, 248,517, hereafter referred to as '517, disclosed by the applicant.

Regarding claim 31, it is obvious as explained in claim 7 above and further the determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claims 32-36, the applicant is claiming various steps / processes for the formation of current carrying pattern / vias on the substrate. However, the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

14. Claims 49-50 and 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shrier, US Patent No 4,977,357 as applied to claims 1-4 above, and further in view of Shrier US Patent No. 5, 248,517, hereafter referred to as '517, disclosed by the applicant.

Regarding claims 49-50, though Shrier does not disclose a semiconductor device, the use of the substrate in the various semiconductor devices is known. Further it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from

a prior art apparatus satisfying the claimed structural limitations. EX parte Masham, 2 USPQ 2d 1647 (1987).

Regarding claims 55-56, they are obvious as explained in claims 51-52.

15. Claims 57-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shrier, US Patent No 4,977,357 as applied to claims 1-4 above, and further in view of Shrier US Patent No. 5, 248,517, hereafter referred to as '517, disclosed by the applicant.

Regarding claim 57-58, though Shrier does not disclose a semiconductor device, the use of the substrate in the various semiconductor devices is known. Further it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. EX parte Masham, 2 USPQ 2d 1647 (1987). The other limitations of the claims 57-58 are explained in claims 6-7 above.

Regarding claims 60-61, they are obvious as explained in claims 51-52.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kawakita et al., Crotzer et al., Childers, Winnett et al., Gordon et

al, Takagi et al., Karpovich et al., Hively, Neuhalfen disclose device similar to applicant's claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar B Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (703) 308 3301. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
October 17, 2001